

**Watershed:** Feather River

**Years Sampled:** 2007-2008, 2010, 2013-2014

**Study Objectives:**

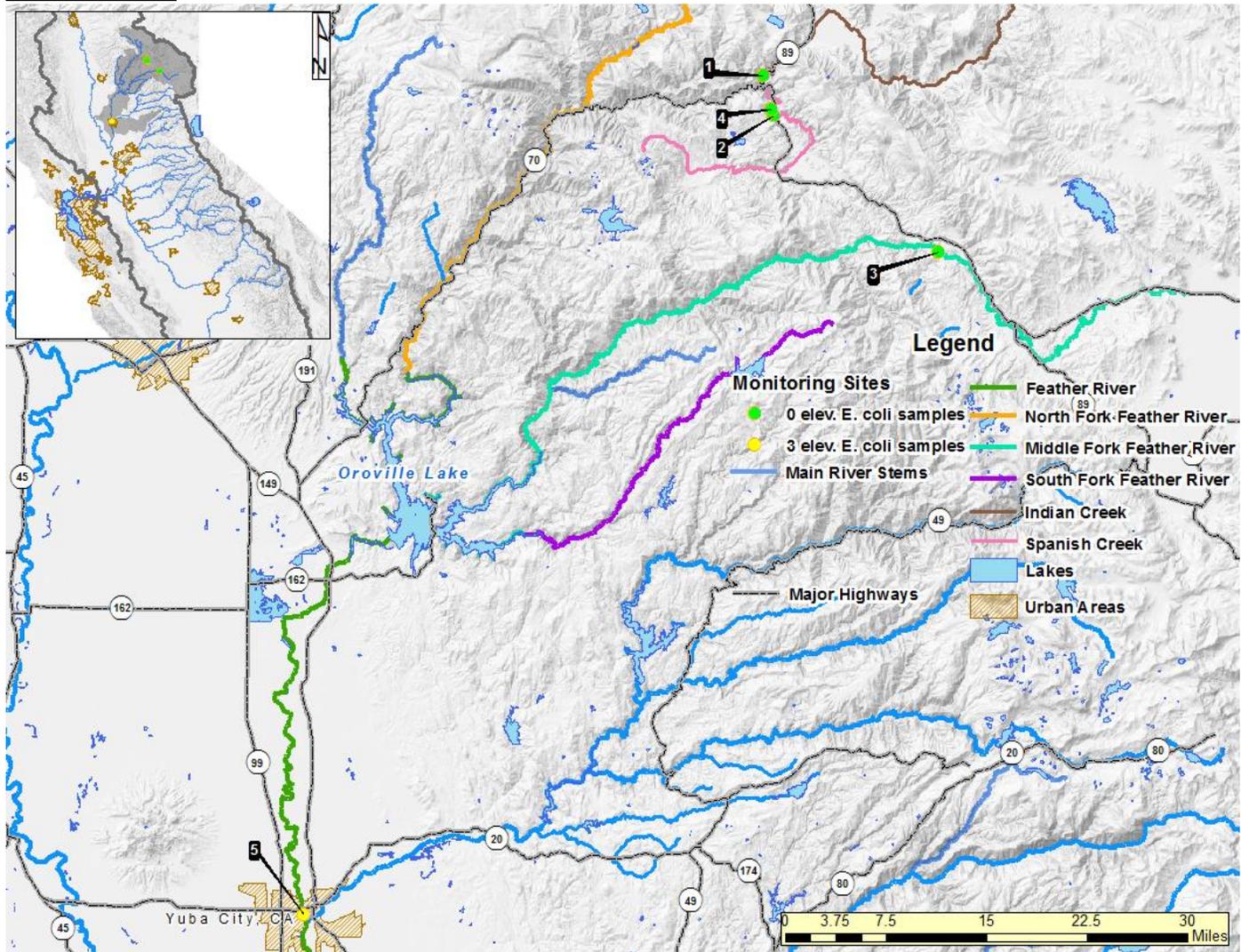
1. Is there any evidence that beneficial uses are being impacted, and if so, what are potential contributors?
2. Are there any noticeable regional, seasonal or trends observed in the water quality data?
3. What are pathogen concentrations at selected monitoring sites?

KEY STATISTICS

Number of sites sampled	5
Sampled by	Water Board Staff (Sac and Redding)
Number of sites sampled for pathogens	0
Number of total samples	35
Sampling Frequency	2x/mo. (May-Sept.)
Assessment Threshold	320 MPN/100 mL

**Message:** One site has had one or more samples with elevated *E.coli*. Four sites never exceeded the assessment threshold

**Site Locations:**



**Summary of Results:**

**Table 1: Field Measurements**

Station Code	Map #	Station Name	Oxygen, Dissolved (mg/L)		pH		SpConductivity (uS/cm)		Temperature (°C)		Turbidity (NTU)	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
518INABSP	1	Indian Creek above Spanish Creek	NR	NR	7.61	8.38	124.5	224.5	15.10	21.40	NR	NR
518PLU900	2	Spanish Creek at HWY-70 USFS Campground	NR	NR	7.14	7.67	198.2	208.4	14.50	20.70	NR	NR
518PLU901	3	Feather River, Middle Fork at Sloat	NR	NR	7.12	7.85	147.9	148.4	13.10	19.10	NR	NR
518PLU902	4	Spanish Creek at Keddie Resort Road	NR	NR	8.30	8.30	116.5	116.5	16.50	16.50	NR	NR
518SUT001	5	Feather River at Beckworth River Front Park (5th Street Bridge)	8.40	14.45	7.65	8.49	58.0	286.0	18.03	26.69	1.14	59.30

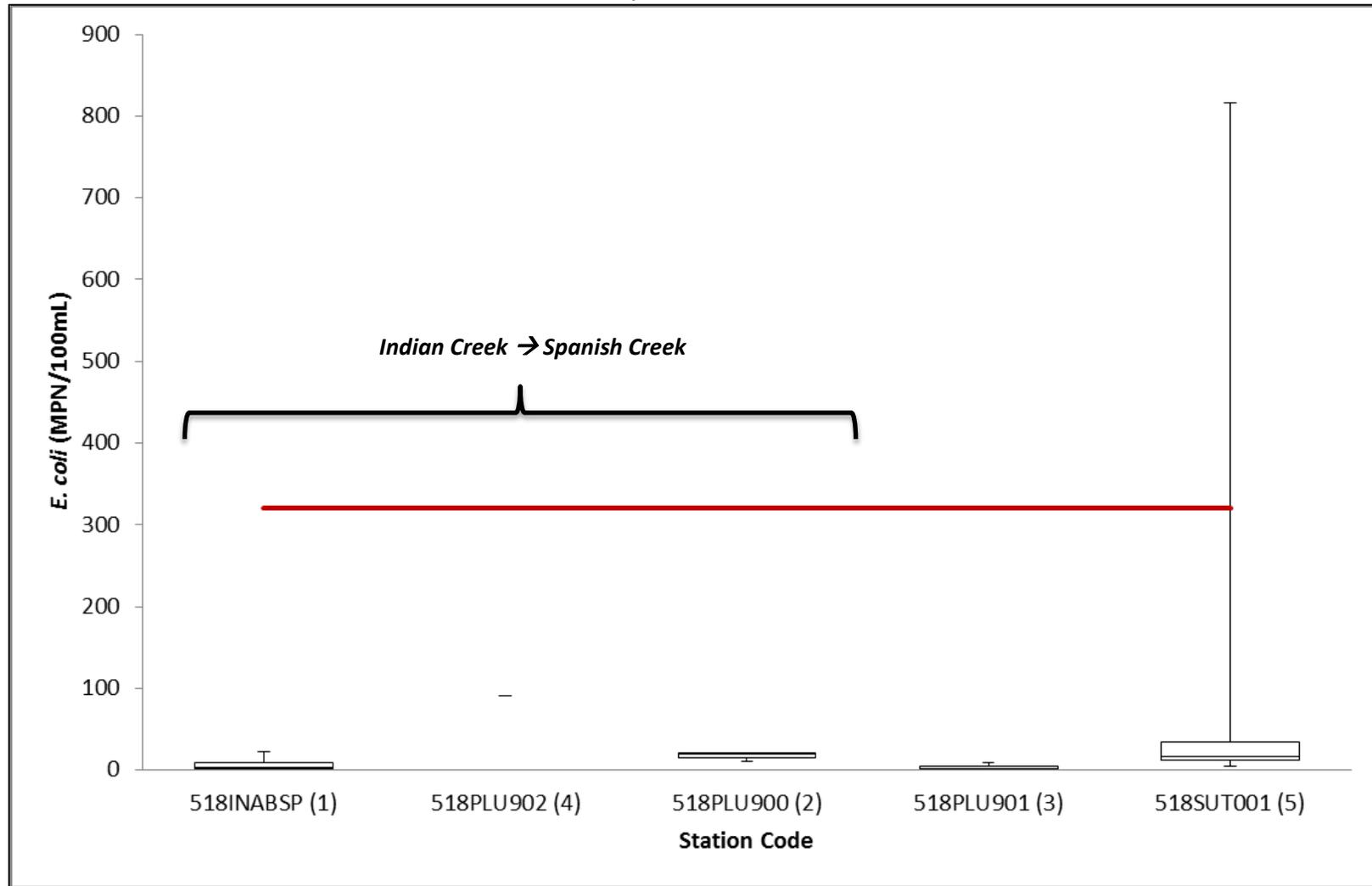
NR: Not Recorded

**Table 2: E. coli and Pathogen Results**

Map #	E. coli (MPN/100ml)					Cryptosporidium (cysts/L)			Giardia (oocysts/L)			Salmonella (MPN/100mL)			E.Coli O157:H7 (Presence/Absence)		
	Mean	Min	Max	Count	>320	Max Result	Count	(+)	Max Result	Count	(+)	Max Result	Count	(+)	Result	Count	(+)
1	7.3	<1.0	23.1	4	0	NA	0	0	NA	0	0	NA	0	0	NA	0	0
2	16.6	10.9	20.1	3	0	NA	0	0	NA	0	0	NA	0	0	NA	0	0
3	3.5	1.0	8.6	3	0	NA	0	0	NA	0	0	NA	0	0	NA	0	0
4	90.3	90.3	90.3	1	0	NA	0	0	NA	0	0	NA	0	0	NA	0	0
5	95.1	5.2	816.4	24	3	NA	0	0	NA	0	0	NA	0	0	NA	0	0

E.coli - Highlighted Cells: Exceeds EPA Guideline of 320 MPN/100ml  
 Pathogens - (+): positive result, Highlighted Cells: positive results, NA: Not Applicable

Graph 1: *E. Coli* Results



1,4,2 = progressive DS flow from Indian Creek (1) to Spanish Creek (4,2)

**WHAT IS THE MEASURE SHOWING?**

Feather River covers an expansive drainage area, collecting its headwaters from the Sierra Nevada and Cascades and eventually emptying into the Sacramento River a few miles north of Sacramento. Flowing west to southwest are its North, Middle, and South Forks, which join at Lake Oroville; from there, the river proceeds south, passing through various municipalities, including Oroville, Yuba City, and Marysville. Feeding into the North Fork is the combined drainage of Indian Creek and Spanish Creek, the latter of which flows within the town of Quincy. Field measurements for each site are shown in Table 1.

Results show that only 3 of 35 samples exhibited elevated levels of *E.coli*; they were located at Beckworth River Front Park (5) with a maximum value of 816.4 MPN/100 mL (Shown in Table 2). The percentage of contamination at the above sample locations is 8.6%; at the site specifically, this percentage is 12.5%. There were no detections along any of the upstream sites (shown in Graph 1).

The watershed is primarily forest (Jin et al., 2013), yet potential non-point and urban sources are abundant. It is heavily utilized for recreational activities, and is home to numerous waterfowl throughout the year as well. In addition, the increasing drought may be a contributing factor for contamination as the waters become more concentrated.

No sites in the Feather River watershed were sampled for pathogens.

**WHY THIS INFORMATION IS IMPORTANT?**

In 2012, the USEPA amended recreational water quality guidelines for human health under the Clean Water Act, specifying the standard threshold value (STV) for the indicator bacteria *E. coli* as 320 colony-forming units (CFU) per 100 milliliters (mL). The STV represents the 90% percentile of the water quality distribution, beyond which the water body is not recommended for recreation (Nappier & Tracy, 2012).

*E. coli* is an indicator of potential fecal contamination and risk of illness for those exposed to water (e.g. when swimming). Since *E. coli* is only an indicator of potential pathogens and does not necessarily identify an immediate health concern, the data collected from this study provide more information on pathogen indicators as well as specific water-borne pathogen concentrations to better assess their impact on the beneficial use of recreation and to identify potential contributors by sub watershed.

**WHAT FACTORS INFLUENCE THE MEASURE?**

*E. coli* and specific water-borne pathogens can come from human or animal waste and may be highly mobile and variable in flowing streams. In addition to human recreational use, the presence of pathogens in water may be the result of cattle grazing, wildlife, urban and agricultural runoff, or sewage spills. The physical condition of the watershed may also influence pathogen measurements, however in this study field measurements (temperature, SC, DO, turbidity and pH) were variable between sites and it is unclear if these constituents had an effect on the *E. coli* or pathogen measurements.

**TECHNICAL CONSIDERATIONS:**

- Data source: Central Valley Water Board SWAMP
- *E. coli* is only an indicator of potential pathogens and does not necessarily identify an immediate health concern.
- Public reports and fact sheets are available at:  
[http://www.waterboards.ca.gov/centralvalley/water\\_issues/water\\_quality\\_studies/surface\\_water\\_environmental\\_monitoring/swamp\\_regionwide\\_activities/index.shtml](http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_studies/surface_water_environmental_monitoring/swamp_regionwide_activities/index.shtml)

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